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by

REGIONAL ADVISER ON DROUGHT AND DESERTIFICATION CONTROL

AN OVERVIEW ON ENVIRONMENTAL CONSERVATION IN ZIMBABWE

Briefing By Messrs. C. Karikamombe, Under Secretary and P. Mugabe, Ministry of Natural Resources and Tourism

1. I discussed with Mesrs Karikamombe and Mugabe about the objectives of my mission to Zimbabwe, namely to familiarize myself with national plans to combat drought and desertification and other related environmental matters. More specifically, I made inquiry into issues relating to:

(i) National plan to combat drought and desertification - whether National Legislations had been enacted and the extent to which the laws were being enforced. In this regard, I was particularly keen to know whether such Legislations encompassed environmental issues such as destocking, prevention of soil erosion, reafforestation, environmental impact assessment studies and halting of the expansion of the Kalahari desert;

(ii) Land tenure in relation to environmental conservation and management;

(iii) Public awareness - the publication of environmental news letters e.g. "SPLASH", a SADCC publication (Englsih) on soil, water and Land utilization programme; and whether there were other publications in Local Languages (Shona, Ntebele) on environmental conservation. Radio, TV and other mechanisms of reaching the peasants;

(iv) Alternative energy sources (biogas and solar energy). Whether efforts were being made in the search for these alternative energy sources to complement the afforestation programmes;

(v) Education, research and training - the extent to which environmental education had been incorporated into primary, secondary and the University education;

(vi) Transboundary issues including information exchange: On this matter, I congratulated the SADCC countries for the information of a novel approach for the co-ordination of various sectors of the economy, whereby Zimbabwe, for example, is responsible for the food Security at the household, national and the subregional level, while soild and water conservation and the Land utilization is the responsibility of the Lesotho Government etc. In this regard, I was keen to learn how this new approach on co-ordination of the various sectors of the economy within the SADCC member States was functioning and what lessons could be learnt from this new approach;

(vii) The Level of national expenditure on environmental protection and conservation in relation to other sectors of the economy;

(viii) Possibility of a field visit to an experimental pilot project on desertification control and/or related environmental conservation activities.

2. Mr. Karikamombe, in responding to my introductory remarks, warmly welcomed me to Zimbabwe and wished me a happy stay in the country, and also hoped that my mission to the country would be fruitful. However, he pointed out that his ministry had expected me the previous week, and that UNDP had not informed him of my arrival in Harare, until the morning of my arrival at the (UNDP) office . He further added that it may not be possible for me to see and hold discussions with all the appropriate authorities (Directors of Departments) since some of them had already gone on leave.

3. Commenting more specifically on the issues which I had raised in my introductory statement, Mr. Karikamombe had this to say:

(a) The Government of Zimbabwe had Launched its National Conservation Strategy in April 1987. Part I of the Strategy deals with the country's resources base, while Part II is concerned with the implementation and administrative organization.In his forward to the Strategy, the then Prime Minister, Hon. R. G. Mugabe (now President of the Republic) reiterated the intention of the Government to "halt environmental degradation which is currently taking place, particularly in our communal Lands, and to reverse the process of desertification".

(b) On the question of Land tenure, Mr. Karikamombe pointed out that about 42 percent of the land surface constituted communal grazing Lands while 37 percent consists of commercial farms. The Government was making arrangements to resettle peasants form the highly degraded communal grazing Lands into commercial farms or elsewhere.

(c) Regarding the question of promotion of public awareness, Mr. Karikamombe informed me that the Department of National Resources had produced leaflets and pamphlets in English, the Shona and Ntebele Languages for mass environmental Literacy. Other media (TV, Radio) as well as public meetings at the village Level were also being used to educate the public about conservation the environment.

(d) On the question of alternative energy sources, Mr. Karikamombe suggested that I talk to officers within the Ministry of Energy, Water Resources and Development, who are more conversant with issues relating to the use of solar and wind energy and biogas.

(e) Regarding formal and informal environmental education, Mr. Karikamombe also referred me to specialists in this area.

(f) On the issue of national expenditure on environmental protection and conservation, Mr. Karikamombe pointed out that his Ministry was obviously not receiving as much financing as other Ministries. He pointed out that an expenditure on

keeping an elephant alive may not seem to be "development" in the eyes of the policy makers. It is the tourism department which gets the credit because of the hard currency generated from the tourism industry. However, the Department of Natural Resources, which has the mandate of the conservation of natural resources does not receive the credit.

(g) As pointed in paragraph 2 above, no itinerary had yet been made for me as UNDP had not alerted the Ministry of my arrival. It was agreed that Mr. P. Mugabe would make the necessary contacts immediately and give me the feed back in the afternoon of the same day.

Visit to Department of Natural Resources

4. Mr. T.P.Z. Mpofu, Director of Natural Resources was on leave, and so I held discussions with the following officers:

Ms. S. Ncube - Regional Secretary;

Mr. I. Kunene - Ecologist;

Mr. D. Marongwe - Deputy Chief, Inspector of Lands.

5. In my introductory remarks, I outlined the basic programme elements of conservation of natural resources,and wished to know the extent to which implementation of these programmes in the country. More specifically, I discussed the following:

(i) Conservation of genetic resources - both plants and animals for medicinal and industrial uses (fibers, waxes, oils, gums, and energy; semi-domesticated animals and fish populations; national gene banks);

(ii) Wildlife and protected areas:

- sustainable utilization of wild-life;
- training in the management of wild-life;
- adoption of National Conservation Strategy;

- co-operation between continuous member States sharing protected areas;

(iii) Conservation strategies vis-a-vis economic development - importance of impact assessment studies prior to project implementation;

(iv) Public awareness on environmental conservation - especially community involvement in environmental conservation activities.

6. In response to my introductory remarks the following comments were made by the officers mentioned above:

A. Public awareness

In addition to posters, which are distributed to Provinces/ Districts and villages, seminars/workshops are often held at the village level. The trained village Leaders, in turn,, impact the knowledge gained to other villagers. I was further informed that members of the police force and the army had also received training in environmental conservation matters, as they are also resource users. I suggested that church Leaders and politicians must also play a greater role in environmental conservation awareness as they are regularly in contact with the masses as well as being consumers of natural resources.

B. Impact assessment

In general, the department advises the government, on the basis of ecological considerations, whether or not an intended project should be implemented. At least, in one specific instance, a project on the construction of a dam has had to be abandoned due to the intervention of this department. There is also a lack of qualified local scientific personnel to carry out the impact assessment studies.

C. Pilot demonstration projects

I was informed that in a number of cases, it had been extremely difficult to procure funds to mount pilot demonstration -

- projects on soil and water conservation and alternative energy sources.

D. Role of NGO

There are numerous NGO's in the country which participate in environmental conservation activities.

Visit to Forest Commission

Rural Afforestation Division

7. I spoke to Mr. C. Phiri, Information and Extention Officer. I was interested in learning about the Commission's work and in particular with respect to the following:

(i) mass or communal forestry;

(ii) plant species being used in afforestation programmes and the availability of seedlings;

(iii) reseeding of rangelands with appropriate grass species;

(iv) destocking in communal grazing lands;

(v) public awareness;

(vi) arrangement for a field visit to projects on afforestation and related projects.

8. In response, Mr. Phiri had the following to say:

A. Mass or Communal Forests and Public Awareness.

The rural afforestation programme started some five years ago. Posters in both Shona and Ntebele languages have been distributed to all the provinces, districts and the villages. Seminars and workshops are regularly conducted at the village level and in Local Languages. Extention workers and NGO have also received training in afforestation and related fields. This training programme has been funded by the World Bank. Parliamentarians are normally invited to address seminar/workshop participants at the opening and/or closing ceremonies.

B. Plant Species in Use and Availability of Seedlings

It was explained that Eucalyptus is the tree species used in most cases. However, I did point out the need to carry out research on the use of indigeneous species in afforestation programmes. The Eucalyptus species are known to be "extravagant" in the water use efficiency. Moreover, a farmer cannot practice agroforestry in a Eucalyptus plantation. I also suggested the use of leguminous tree species (Acacia, Leucaena, Prosopis) which fix nitrogen in the soil.

On the question of availability of seedlings, I was informed that the Commission was working round the clock to ensure that there were seedlings available for distribution to everybody. Currently there are only 72 nurseries in the country. However, primary schools some secondary schools and youth groups were currently being used in the production of seedlings. The production of seedlings by school children in the responsibility of the Ministry of Education. The Commission only provides technical assistance.

C. Reseeding of Rangelands

No seeding of communal rangelands with appropriate grass species was being contemplated. The communal rangelands are densely populated, and it is for this reason that the governmnet has decided to resettle some of the occupants of these communal lands. In some cases, the villagisation programme has been quite successful where the farmers have had to paddock their lands in order to effect rotational grazing. Resettlement land constitutes about 2.6. mi. ha (6.7 percent of total land surface area).

D. Destocking

Mr. Phiri emphasized that destocking in communal rangelands was a very complex issue. Cattle are still considered as a good investment and a sign of wealth. Indeed, a young graduate who has worked for a year or two would be expected by his parents to have bought several heads of cattle; otherwise, he would be castigated for having squandered his money, even if he had invested in another venture. Obviously, the attitudes of the local people must be changed, and that they must be encouraged and assisted to invest in other ventures other than cattle.

9. Questions and Discussion

A. I inquired about the ratio of females to males who serve in the Commission as foresters or extention workers. I was informed that there were very few females. This is because few women get selected or admitted into training schools for forest officers studies. Mr. Phiri, however, conceded that a female who had worked as an extention officer had had an outstanding record in her work performance in contrast to her male counterparts. The Commission had no power, however, to influence the admission of females into training schools.

B. On the question of other sources of energy, I suggested that the Commission should work closely with the Ministry of Energy, Water Resources and Development in enhancing the use of other forms of energy such as biogas, solar and wind energy. I was informed that it would be difficult to change the attitudes of people in accepting the use of certain forms of energy such as biogas, even if they were introduced in densely populated villages. Mr. Phiri, however, agreed that the switch to other forms of energy would enable the establishment and growth of tree seedlings, which are normally harvested at very young stages for firewood or as building materials.

C. Mr. Phiri wished to know whether I knew anything about the Pilot village Project of AMCEN. That the sister department of Natural Resources and Tourism had carried out the necessary feasibility studies and was now ready to implement the project but had not heard from Regional Office for Africa (UNEP). I promised him that I would communicated this information to DR. M. Ferrari, Regional Representative and Director of the Regional Office for Africa (ROA - UNEP)

10. We agreed that a field visit to afforestation sites and other projects on environmental conservation would take place on Saturday 30 July 1988 (whole day). That Mr. A. Tembo, Provincial Forest Commissioner would make the necessary arrangements and that he would also accompany me to the field.

Visit to Department of National Parks and Wildlife Management

11. I held discussion with Mr. George N. Pangeti, Deputy Director. As usual, I briefed Mr. Pangeti of the nature of my mission to Zimbabwe and in particular to his department. With regard to this Government Department, I was keen to learn about the following:

(i) Wild life and protected area:

- Sustainable utilization of wild life;
- training in the area of management of wild life;
- problems of poaching;
- role of NGOs in wildlife conservation.

(ii) Public awareness;

(iii) Conservation of genetic resources;

(iv) Wildlife clubs;

(v) Research, extension and market development;

(vi) Export of plant species (Aloe and other succulent species);

(vii) Co-operation between contiguous member States sharing wild life and protected areas.

12. Mr. Pangeti responded as follows on the issues had raised:

A. Wild life and protected areas

The Government's plan was to utilize the wildlife on a rational and sustainable basis. Although poaching was a serious threat and particularly with respect to elephants, the department was patrolling the parks vigorously to net the culprits involved in poaching. There is a Natural Resources College for training staff for the department. In addition, Mweka Training College in Tanzania has been designated by SADCC intergovernmental organization as a training institute for the SADCC countries. Mr. Pangeti was particularly critical of the role of some NGOs, which, in his opinion, were undermining the activities of his department.

B. Public awareness

The department continues to promote public awareness through public education programmes among the general public extension workers and the decision makers.

C. Conservation of genetic resources

The setting up of a gene bank for plant species is the responsibility of the University of Zimbabwe. There are Laws which prohibit fishing in rivers. Fishing in lakes is controlled through licensing.

D. Wild life clubs

There are approximately 500 wild life clubs in the country. The major problem associated with the operation of the clubs relates to inadequacy in staffing in the department to assist and co-ordinate the activities of the clubs.

E. Research, extension work and market development

Because of the acute shortage in staffing of the department, research and extension work had been given least emphasis. However, Mr. Pangeti believes that the University has an obligation to develop viable M.Sc and Ph.D programmes in Biology and related fields. He added that he was constantly embarrassed to attach a diploma or B.Sc. holder to a visiting scholar from abroad because the two could not match. As far as Mr. Pangeti is concerned, research opportunities are available in the department, and it is for the University to formulate relevant viable and applicable research programmes. Currently, there are only two scientists catering for the research section; one is an Ecologist and the other one an Aquatic Biologist. There are very few extension workers.

F. Export of plant species

The department is only responsible for the 12 percent of the total land surface area of the country, which has been gazetted as national parks. There are laws governing the collection and exportation of plants from the country. In the case of national parks, one may collect plant material for export with permission from the Director. In addition, the collector must be accompanied by a staff officer during the collection. Finally, the collector is expected to submit a Report to the Director of the Parks once he completes his/her research.

G. Co-operation within the SADCC member States

Because of the existence of SADCC, an intergovernmental organization, co-operation amongst the SADCC member countries has been relatively smooth. The Kariba Dam project, for example, is a SADCC project funded by NORAD. One of its objectives is to analyse the social economic status of the people living around the dam.

Visit to Department of Biological Sciences
University of Zimbabwe

13. Present:

- Dr. J.M. Gono - Chairman of the Department
- Prof. M. Swift - Ecologist
- Dr. Chris Magadza, ULKRS, Box 48 Kariba
- Dr. Charles
- Regional Adviser.

14. In my introductory remarks, I outlined some of the major environmental conservation programmes which are closely related to drought and desertification control. I paid particular attention to the nature of research activities, which Departments of Biology in national institutions ought to be carrying out in the area of drought and desertification control. A summary of the major points which I stressed appears here below:

15. Environmental issues relevant to desertification control:

(i) Conservation of genetic resources (microbial strains; plants and animals, especially the endangered species);

- medicinal and industrial plants - fibers, oils waxes, gums, etc.
- semi-domesticated animals (donkeys), fish population;
- establishment of National Gene Banks;
- collection and export of plant species (e.g. Aloe) and other succulent plants.

(ii) Wildlife and protected areas.

- sustainable utilization of wildlife;
- training in management of wildlife;
- problems of poaching;
- role of NGOs;
- co-operation between contiguous member States sharing natural resources (e.g. wildlife, river basins);
- wildlife clubs (on the increase or declining?)

(iii) Impact assessment studies (IAS)

- whether economic development and conservation of natural resources were being pursued as goals of equal importance.

Consequences of implementing projects without IAS

- situation of dams;
- salinization;
- eradication of tsetse flies in order to conver unsuitable range lands into farms for crop plants, resulting in reduction in productivity after a few years.

B. Desertification control programme activities

(i) Afforestation programmes:

- mass or communal forestry - where all citizens participate in afforestation;
- plant species (Eucalyptus, legumes: Prosopis Acacia, Leucaena;
- Controlled grazing (destocking?)
- reseeding of rangelands with appropriate grass species (not NADP malic enzyme grass species but rather those possessing the NAD-malic enzyme).

(ii) Alternative sources of energy - biogas, wind power solar energy (need for change in social attitudes).

(iii) Control of soil erosion;

(iv) Reclamation of saline/alkaline and semi-arid lands;

(v) Public awareness (everybody is a resource user)
- community involvement at grassroots level;
- training of extension workers police, army;
- use of parliamentarians;
- use of church leaders;
- use of school children in raising of tree seedlings.

(vi) National, Sub-regional, regional and international conventions;

- national legislations relating to conservation, enforcement of the laws;
- regional conventions and protocols;
- signing and complying with international conservation and environmental conventions CITES' Stockholm Declaration 1972, Lagos Plan of Action, 1980; Cairo Plan of Action 1985; African Convention on the Conservation of Nature and Natural Resources, 1986; The UNCOD' 1977, etc.

(vii) Environmental education

	- Curriculum development; teaching materials (books) and aids
- primary schools - secondary schools	- University input into curriculum development in secondary schools-essential

C. University teaching and research

(i) B.Sc. programme:

- discussions with officials in ministry of Natural Resources and Tourism and Departments of Natural Resources, National Parks and Wildlife Management; Forest Commission;
- require B.Sc. graduates who have specialized in specific areas such as those listed above.

(ii) Requirement of scientific personnel holding M.Sc. & Ph.D. degrees to conduct relevant research:

- numbers of B.Sc, M.Sc. trained by the University - too few!

D. Research in the field of drought and desertification control - to emphasize:

mechanisms of desertification process in hot tropical and sub-tropical climates:

- desert sand morphology and sand movements;
- monitoring of environmental changes for data collection;
- drought resistant crop plants including grasses for rehabilitation of arid and semi-arid areas ;
- agroforestry research for arid environments;
- sand dune stabilization with emphasis on identification and selection of plant species for use;
- rangeland management and monitoring (aerial photography, ground surveys, remote sensing);
- tissue culture techniques for rapid multiplication of selected plant species for rehabilitation of semi-arid and denuded areas;

- development of teaching programmes and aids on desertification and desertification control for primary, secondary and University.

16. In response to my introductory remarks, Professor Swift had the following to say:

A. The B.Sc. undergraduate programme was a general degree programme with the exception of those students pursuing special options such as Ecology. There may be need to introduce further specialization at the undergraduate level whenever resources become available. The M.Sc. course in Tropical Resources Ecology has been running for the past 15 years or so. Dr. Peter Frost is currently in-charge of the course. Professor Swift stated that the course was very practical and relevant to the needs of Zimbabwe. However, he conceded that the number of students graduating from the course was too small for the vacancies available in the country. That there were no other M.Sc. or Ph.D programmes being run by the department although the programmes had been approved by the relevant University machinery.

B. Professor Swift's research is in the field of Soil Biology. His main research activities are in the area of soil-nutrient. cycling in the savannahs in relation to grazing and tree clearing. Professor Swift pointed out that grazing and tree clearing are known to interrupt mineral cycling in this ecosystem. In more recent years, Professor Swift had been carrying out research on the relationship between tree species (both indigenous and exotics) and soil types. Other members of staff are currently conducting research on fuel wood surveys and also drought tolerance in native tree species.

Comments by Regional Adviser

17. I suggested that Professor Swift and other members of staff should be encouraged and supported to carry out further research into the relationship between soil types and growth and productivity of various tree species, and also drought tolerance of native tree species. Results emanating from such studies would enable the Commission of Forests in making decision on what native and exotic

tree species to recommend for afforestation programmes in the various ecological zones of the country. At the moment, the common tree species recommended for afforestation is the Eucalyptus, which has certain disadvantages as explained in paragraph 8. B above.

17. B. On the question of post-graduated training (M.Sc; Ph.D), I urged the department to make every effort to commence the training of more students who would participate in research programmes of the various departments, which I had visited earlier in the week. I had been informed that no research was taking place in the various government departments because of lack of scientific personnel. It appeared to me that the Department of Biological Sciences was concentrating on the training of students for the general B.Sc. degree. Such graduates have obviously not gained the necessary practical and technical skills to enable them conduct research on their own. Most of the students graduating with the B.Sc. degree ended up as teachers in high schools.

18. A The Chairman of the department, Dr. Gono explained that his group was working on biochemical markers by analysis of isoenzymes to determine why certain crop plants are more tolerant to water stress than others.

18. B In addition to drought tolerance studies, the group was also making attempts to understand the genetic constitution of indigenous tree species, which are known to exhibit slow growth rates in contrast to exotic species. From these studies, it should be possible to make a selection of native tree species with high growth rates for further breeding programmes.

18. C The group was also involved in the genetics of the fish genus Tilapia with a view of selecting the most promising species for further breeding experiments. Fish provides cheap protein and that selected species would be raised in artificial ponds, lakes and dams throughout the country.

18. D. Dr. Gono also added that he was Chairman of a group working on the development of a Gene Bank not only for Zimbabwe but also for the SADCC countries. The Chairman went on to say that the stumbling block was inadequate of finances to assist in post graduate training and to conduct research, and hope that the international community would come to the aid of the department so that it can serve as a centre of excellency in research for the SADCC countries.

19. A lecturer from the Social Sciences, who works closely with the Department of Biological Sciences, elaborated on their research activities which pertains to migration of peasants from one communal grazing land to the next. The research group is interested in ascertaining the reasons for the migration and whether or not the peasants contemplate on returning to their previous communal lands. This information would be useful to the government in formulating its villagization programme.

Comments by Regional Adviser

20. A. I complimented the scholars for their research efforts and added that the training of students whether at under-graduate or post-graduate level rested with the national governments. However, certain research programmes, if they were designed to solve environmental issues, and were of particular interest to the UN organs, then they could be looked at along with others emanating from other parts of the African region.

20. B. On the question of inclusion of environmental conservation component in the primary and secondary curriculum, I was informed that only one University representative sat on the board that prepares and develops curricula for secondary schools. Such a representative may not necessarily be from the Faculty Science; he could be from any other faculty. Under these circumstances, the input of the University in the secondary school curricula would be minimal.

Visit to Ministry of Energy

Department of Energy Resources and Development

21. I held discussions with Mr. C.B. Chimombe, Assistant Director and Miss Elizabeth Muguti.

22. After introducing myself and assuring them of the importance of their department in combating drought and desertification, I then outlined briefly those environmental conservation issues of interest to me, which, subsequently formed the agenda for our discussion.

23. In response to my introductory remarks, Mr. Chimombe had the following to say: Zimbabwe has no petroleum but has coal deposits, which can readily be mined. The country is also endowed with hydroelectric potential and the Ministry is slowly and steadily harnessing some of water-falls for electricity production. No feasibility studies have been carried out on geothermal energy although a number of hot springs exist in the country. Zimbabwe blends locally produced ethanol with petrol in the ratio of 10:9. Malawi, a member of the SADCC countries, has started using 100 percent ethanol in vehicles.

Biogas

24. The Chinese experts on biogas had been in Zimbabwe for some-time now. Initially, pilot projects were constructed in specific villages and the Minister of Energy himself commissioned their operation, by turning on the lights and lighting the stove. Food was subsequently cooked on the stove and eaten by all the villagers and the Minister's entourage. The Ministry then began carrying out feasibility studies and constructing biogas plants for those that applied to the ministry. Today, there are too many applications, that the ministry is unable to cope with the demand. However, the ministry is now providing only the technical know-how but the essential materials (bricks, etc.) are purchased by the co-operative or the individuals. I was further informed that UNDP had agreed to assist Zimbabwe in training more technologists in the construction of biogas plants.

Solar Energy

25. Currently there are three companies in the country that manufacture solar water heaters. The Government has recently entered into an agreement with GTZ to provides funds for studying the accepta-bility of solar water heaters, particularly in the urban areas. The question which needs to be answered in this study is whether or not urban dwellers will use less firewood to heat water when solar heaters become available.

Use of Crop Residues

26. The use of crop residues (straw, stalks, cobs, husks) is still practised by people in the rural areas. The Government does not discourage the use of these crop residues as it can not provide alternative energy sources. I was further informed that relatively few people use charcoal; they prefer firewood.

Improved Cooking Stoves

27. The story of improved cooking stoves was narrated by Miss Miguti. It is similar to that of the biogas plants. The masses have now accepted the use of improved cooking stoves. There are, however, many groups of people who are manufacturing them. The Government is, therefore, carrying out a study to determine those which are most effective as well as cheap to manufacture. I was further informed that the relationship between the Department of Energy Resources and Development and the Rural Afforestation Division is very good. That they have harmonized their activities so that they visit the same sites or villages together.

Enforcement of Laws on Afforestation and Deforestation

28. The Zimbabwe Government is highly decentralized. There are 8 provinces in the country, and each province is composed of several districts. Each district is divided into villages and the latter into wards. A ward is represented by a Councillor, in the rural or urban council.

Afforestation programmes on communal lands, for example, is directed by the Councillor. It is illegal to cut trees but of course people steal them.

Deforestation and upland farming are discouraged, and again it is the local councillor and the other leaders to enforce the laws at the ward and village levels.

Extension Workers

29. There are few trained technical personnel who could be employed as extension workers. The few who are available prefer to work for the private sector for obvious reasons.

Research into Alternative Sources of Energy

30. This whole area is being hampered by lack of trained personnel Mr. Chimombe felt that this is an area where the University could help the Government. He added that he would be happy to employ University graduates in the field of Sociology to carry out surveys on the attitudes of people on the new sources of energy, which were being introduced.

Field Trip to Mashona East Province

31. The field trip to Mashona East Province took place on Saturday 30 July 1988 starting at 09:00 a.m. and ending at about 5:00 p.m. The Provincial Forest Commissioner, Mr. A. Tembo provided the transport and took me round the Province. We travelled a total of about 400 km. Starting from Harare, we travelled south east towards Marondera (75 km.) then turned north-west and stopped for lunch at a shopping centre, Juru. We then proceeded to Domboshawo Hills, then to Chinamora and eventually to Chirowodza township. We finally returned to Harare via Domboshawo Communal grazing lands.

32. The objectives of the field trip were to observe:

(a) the extent of afforestation programmes

  (i) mass or communal forest;

  (ii) tree nurseries at schools;

  (iii) plantations around Harare city;

  (iv) availability of firewood at the household level.

(b) the extent of land degradation in communal grazing lands; and the success of the villagization programme;

(c) any pilot biogas plants.

Tree Plantations around Harare City

33. There are extensive Eucalyptus plantations around the Harare city. I estimated the age of the trees I saw to be about three years old. In another 7 years or so, they should be ready or use as poles and firewood. The city of Harare is expanding rapidly and there is an urgent need to plant some more trees which will provide firewood for the ever expanding population.

Communal Grazing Lands

34. As pointed out earlier, 42 percent of the total land surface area of Zimbabwe (16.4 million ha.) constitutes the communal grazing lands - formerly the African Trust lands. About 3.7 million people occupy and subsist on the communal grazing lands. The number of people subsisting on the communal lands has increased by 33 percent between 1962 and 1977. The peasants on these communal lands have no title deeds to the land they use. However, the owners of the commercial farms (37 percent of Zimbabwe land, i.e. 14.2 million ha.) possess title deeds to their farms.

35. I was informed that about 85 percent of the energy demand in rural areas is met by firewood. Although the Forest Commission has embarked on a vigorous afforestation programme within the communal grazing lands, I did not see any evidence of afforestation activities in the Mashone East Province. However, it was quite evident that native species (mainly Brachystegia) had been cut for fuel wood and the poles for roofing houses. (The walls of most houses are constructed of bricks).

36. I saw hundreds of native cattle (there were very few goats and sheep) grazing on the communal lands.

37. The soil of communal lands is sandy. Where overgrazing had occured, the ground had been left bare and that there were no trees or shrubs. However, it was also quite evident that regeneration of native species would readily occur in the absence of grazing. On our way, we saw luxuriant growth of miombo forests of mix Acacia and Brachystegia wherever there was no grazing.

38 I saw one area which had been severely over-exploited and the inhabitants of the area were using dried cow-dung and plant residues for cooking purposes.

39. The main occupation of the peasants on communal lands is to herd livestock. There was little or no evidence of crop production. The latter was however, quite evident on commercial farms. The large scale farmers were either irrigating their crops (wheat or barley) or were in the process of ploughing their fields in preparation for the next season.

Tree Nurseries

40. Mr. Phiri, of the Forest Commission, had earlier informed me that there were 72 nurseries in the entire country. Mr. Chimombo, Assistant Director of Energy Resources and Development added that most primary schools and a few secondary schools in the country had established their

own three nurseries. The concept of establishment of tree nurseries at every primary and secondary school is very commendable. I saw tree nurseries at some of the primary schools that I visited in Mashona East Province. However, there were no indigenous tree seedlings. This idea was mooted by the Ministry of Energy but needs to be encouraged and supported in order to gain momentum.

The villagisation Programme

41. Although the government is contemplating on moving peasants from the severely overgrazed communal grazing lands to other sites, and that this exercise had been effected in some areas, I saw no evidence of villagization in the Province that I visited. I only saw the old homesteads in the communal grazing lands with cemented graves in many homesteads. I am inclined to believe that the government may be encountering resistance from the "owners" of these homesteads because:

(a) they have attachment to these homes - that their ancestors were burried there and that they are under social obligation to look after their graves;

(b) the government would probably not compensate them sufficiently for the infrastructures (dwellings) in which they are currently living;

(c) the rights of land ownership in the new villages would still be vested in the government - that is the peasants would not receive title deeds for their new plots. In other words, the new lands (plots) would still be "trust" lands on behalf of the government;

(d) villagisation may entail restriction in the number of animals to be kept, a maneuvre which would be vigorously opposed by the peasants.

42. I saw a number of boreholes and water reservoirs and dams in the Domboshawo communal grazing lands. This had been done by the government.

Development of Alternative Energy Sources

43. Again, I saw no biogas plants, solar energy heaters or wind power in the communal grazing lands I visited. It is quite probable that these pilot demonstration projects have been set up in other provinces. Alternatively, there may be only a few pilot plants scattered here and there in the country.

Discussions with Mr. Andre Klan, UNDP Assistant Resident Representative (Programme), Harare

44. I held discussions with Mr. Klan about my impressions on environmental conservation activities in general and desertification control in particular in Zimbabwe. More specifically, we discussed issues relating to:

(a) Land tenure system;

(b) Training of technical and professional staff;

(c) Afforestation programmes including establishment of nurseries and woodlots plantations around the city of Harare;

(d) Public awareness;

(e) Focal point on desertification control;

(f) Zambezi Action Plan (ZACPLAN)

45. After a lengthy discussion of each of the issues listed above, we both agreed on the following:

Land Tenure System

46. That land tenure system is the most difficult and explosive problem facing the Zimbabwe Government. So land as the grazing lands continue to be communally owned and cattle communally grazed, it is going to be difficult to effect environmental conservation measures. It may be necessary to enact new land laws which would enable individuals to receive title deeds to their grazing lands. Mr. Klan informed me that he was not aware of actual settlement schemes which had been undertaken by the Government other than feasibility studies. However, the National Conservation Strategy indicates resettlement land of about 2.4 million ha.

Training of Professional and Technical Staff

47. This is a problem of many developing nations. The resources are scarce, and it is not possible for Government to train the required professional and technical staff. Some of the well trained staff normally end up in the private sector.

Afforestation Programmes

48. We agreed that the Government of Zimbabwe was trying its level best under the difficult circumstances cited in paragraph 46 in afforestation activities. The woodlots plantations around Harare city and the few school nurseries, which I had seen on my tour were quite impressive. However, much still needs to be done on communal grazing lands.

Public Awareness

49. Mr. Klap confirmed that UNDP had been supporting programmes on non-formal education on conservation measures at the ward and village levels. That the Government is determined that every Zimbabwean becomes aware of the need to conserve the environment and the country's natural resources, and hence the training of the army and police staff in conservation measures.

Focal Point on Environmental Conservation especially Desertification Control

50. We agreed that there was an urgent need to create a body (or a Ministry) to co-ordinate the implementation of the National Conservation Strategy, which was compiled by the Ministry of Natural Resources and Tourism. Many issues discussed in this document fall under the aegis of other Ministries - Energy, Agriculture, etc. There is an obvious need to create the Ministry of Environment to co-ordinate all activities pertaining to environmental conservation matters. At the moment, it is not quite obvious to pin point the department which handles drought and desertification control (i.e. the country does not appear to have adopted a plan of action to combat drought and desertification).

The Zambezi Action Plan (ZACPLAN)

51. The ZACPLAN was adopted at a meeting in Harare in May 1987. This is an action plan on the environmentally sound management of the common Zambezi River system. The countries which participated in ZACPLAN meeting included: Angola, Botswana, Malawi, Mozambique, United Republic of Tanzania, Zambia and Zimbabwe. ZACPLAN is a SADCC programme to be implemented with the assistance of UNEP. Because Lesotho is responsible for the co-ordination of Soil and Water Conservation and Land Utilization, it co-ordinates the ZACPLAN. The project is expected to cost about US$ 12 million over the next 2 1/2 years. The

implementation of the ZACPLAN would require the establishment of Intergovernmental Co-ordinating Committee and a Co-ordinating Unit and a Trust Fund.

52. The final document which was signed by the Governments represented include brief statements on the following:

Article I	-	Action Plan
Article II	-	Institutional and Financial Arrangements
Article III	-	National Focal Points
Article IV	-	Implementation of the Plan
Article V	-	Final Clauses.

RECOMMENDATIONS FOR THE GOVERNMENT OF ZIMBABWE

53. Zimbabwe is one of the few countries in Africa which has developed and launched a National Conservation Strategy (NCS). The purpose of the NCS is to protect nation's support systems for sustainable development and utilization. The successful implementation of the NCSA will certainly depend on availability of financial resources, the availability of infrastruture and the enforcement of legislations which have been promulgated for conservation of national resources.

54. I would like also to take this opportunity to congratulate the government of Zimbabwe for the following other achievements in the field of environmental conservation and resource management:

(a) promotion of public awareness on environmental conservation - e.g. the training of members of the police force and the army in environmental conservation; use of school children to produce tree seedlings for afforestation programmes; community participation in environmental conservation programmes at the village and ward levels (i.e. promotion of environmental literacy).

(b) establishment of wood-lots around the major urban centres (e.g. Harare).

(c) ability to produce enough food to feed the nations plus surpluses for export (e.g. maize).

(d) working in close collaboration with other SADCC countries resulting in the exchange of information on environmental conservation matters and particularly in the management and

exploitation of shared natural resources (e.g. The Zambezi Action Plan).

(e) working tirelessly to improve food security sector of the economy through expanded production at the household, national and the subregional levels of the SADCC member states.

55. In paragraph 1 above, I have pointed out the need for financial resources from the national government and the international community to assist in the formulation and implementation of lasting solutions to the various problems addressed. The participation of all citizens will also be required. The peoples of a nation constitute the greatest resource in the implementation of programme activities. The recommendations presented in paragraphs 4-9 are however, meant to assist the policy makers and the implementers of various projects to undertake a self-evaluation exercise on the issues addressed. In some cases, it may be necessary to carry out exhaustive studies before solutions can be found. In many other instances, data are already available, and all that remains is the implementation of the activities.

CONTROL OF OVERGRAZING (DES[illegible]?)

56. There were a number of areas that I saw during the field trip which could be classified as being severely denuded. This degradation has been caused mainly by overgrazing and over-exploitation of the land. This was mainly characteristic of the communal grazing lands. As I pointed out earlier, I saw hundreds of cattle grazing in these communal grazing lands without any attention being paid to the land carrying capacity. It is now abundantly clear that overgrazing results in severe soil erosion and land degradation which culminates in desertification. Peasants and pastoralists in many parts of Africa today take pride in the number of cattle they possess. A large herd of cattle stands out as a symbol of wealth and equally as an indication of social status. Ecological concepts of land carrying capacity or grassland utilization on a sustainable basis are totally foreign to them.

57. Because of the difficulties to be encountered in the control of overgrazing, the solution, therefore, lies in the restriction of the number of animals per unit land area. It may, therefore, be necessary for the Government to assist the peasants in:

(a) improving the quality of animals through breeding and disease control;

(b) persuading the peasants to sell more animals each year;

(c) setting up of pilot demonstration schemes of "ideal farms"

in strategic communal grazing areas to serve as examples;

(d) improvement of communal grazing lands by reseeding with appropriate grass species and the planting of fodder/ forage crops.

AFFORESTATION AND PROTECTION OF EXISTING FORESTS

58. There is an urgent need for intensification of afforestation activities particularly in the communal grazing lands. I noted that Eucalyptus is the commonly used species in afforestation programmes. However, it is well known that this species is "extravagant" in water use efficiency and therefore, its use should be limited. Moreover, it is not possible to practice agroforestry where Eucalyptus is one of the crop plants. It is therefore necessary to search for fast growing native species to use in afforestation programmes. There are also a number of leguminous tree species (e.g. Acacia, Casuarina, Leucaena Prosopis) which could be used in afforestation. Because of their ability to fix atmospheric nitrogen in the soil through the process of nitrogen fixation, the use of these species tend to enrich the soil.

59. Research at the University of Zimbabwe into appropriate native species for use in the various ecological habitas of the country should be encouraged and supported by the international community and friendly nations. Attention should also be focused on drought resistant species for use in the semi-arid areas. Additionally, research in tissue culture technique for the rapid multiplication of selected species should also receive priority attention.

60. The Miombo woodland of mixed Acacia and Erachystegia tend to regenerate readily possibly due to high rainfall. Every effort must be made to protect and utilize the remaining woodlands on a sustainable basis. There are many enough legislations pertinent to natural resources conservation which have been promulgated in the country. What remains now is the enforcement of these laws.

PUBLIC AWARENESS

61. I have already complimented the State and the NGOs for the extensive publicity so far carried out on environmental conservation, and in particular on afforestation programmes and the rational utilization of natural resources. I have noted with satisfaction the comprehensive programme activities on environmental education aimed at peasants. School children, the police and army forces and other groups.

62. I am inclined to believe, however, that members of parliment, individually and collectively, as policy makers, have a crucial role to play in mobilizing the people within their constituences for effective participation in environmental conservation activities. It is not enough for the parliamentarians to be invited to read a speech at the opening and/or closing of a seminar/workshop.

63. Church leaders are also resources users, and have an equal responsibility to inform the other resource users (i.e. members of the congregation about the need to conserve the environment. I am sure they believe in the saying "prevention is better than cure". If this be the case, it is not good enough to wait for the peasant to be whisked to the hospital in order to pay him a visit. Visits should also be made to communal grazing lands, and furthermore, they should not be ashamed of "preaching" on such topics as soil erosion vis-a-vis food production, the need to keep the homestead clean, overgrazing and cutting of trees result in desertification, etc.

ALTERNATIVE SOURCES OF ENERGY

64. The rate of deforestation in many African States is quite alarming. The trees are felled for firewood, charcoal, and construction of dwellings,. These are necessities of life. Through mass education, a peasant may learn that deforestation is a major factor in desertification process. He has perhaps been told that whenever he cuts one tree, he should plant five seedlings. The native species being cleared are probably 30 years old and are being replaced, in most instances, by Eucalyptus.

65. In order to allow sufficient time for regeneration and growth of the felled trees and the newly planted Eucalyptus, the peasants need alternative sources of energy to fuelwood. In other words for the afforestation programmes to succeed, the government has an obligation to assist both rural and urban dwellers to procure and use alternative sources of energy such as biogas, wind power, solar energy, etc.

66. If the search for alternative sources of energy is not pursued with vigour, deforestation and land degradation will continue unabated, resulting in encroachment of deserts on the remaining arable lands. Additionally, there is need to search for other cheap material for building urban and rural homes instead of using poles.

ENVIRONMENTAL EDUCATION

67. Although I did not have an opportunity to examine the primary and secondary school curricula, I am however, hopeful that a substantial amount of environmental education has been included in their syllabi. I also hope that the curriculum of the teacher training colleges has been developed bearing in mind the

relevance of subject matter to be taught in schools.

68. As pointed out elsewhere, I visited several government departments and also the department of Biological Sciences at the University of Zimbabwe. The lack of trained scientific personnel to participate in a range of research activities in government departments was quite evident. Training of indigenous scientific personnel must be viewed as a long-term process but must start now.

69. Time has come when the government should seriously begin to consider the phasing out of the training of B.Sc students abroad and train more postgraduate students in the fields of natural sciences and agriculture. The University of Zimbabwe must also train more students at the M.Sc. and Ph.D. levels, who in turn, would participate effectively in research on environmental conservation.

70. In the area of drought and desertification control research should emphasize on the following:

- mechanism of desertification process in hot tropical and sub-tropical regions;
- desert sand morphology and sand movements;
- sand dune formation and stabilization with emphasis on identification and selection of plant species for use;
- monitoring of environmental changes - including establishment of meteorological centres for data collection;
- drought resistant crop plants including grasses for rehabilitation of rangelands;
- agroforestry research for semi-arid environments;
- rangeland management and monitoring (aerial photography, ground surveys, remote sensing);
- tissue cuture techniques for rapid multiplication of selected plant species for rehabilitation of semi-arid and severely aroded areas;
- development of teaching programmes and aides on desertification and desertification control for primary, secondary and University.

FOCAL POINT ON ENVIRONMENTAL MATTERS

71. Although the Department of Natural Resources has done a commendable job in steering the environmental conservation movement in the country, I am inclined to believe that there is still need to create a Ministry of Environment. Such a Ministry would be responsible for the co-ordination of all the programme activities of environmental conservation - including natural disasters such as drought and desertification control. At the moment, it is not possible to pin point the department which is responsible

for drought and desertification control matters. Has the country formulated a plan of action to combat drought and desertification?

72. SADCC has identified priority environmental conservation problems within the subregion including overgrazing, desertification, soil erosion and degradation, climate variation, etc.

73. Indeed, strategies on combating these problems have also been suggested and they include:

- preparation of national and regional plans to combat desertification;
- establishment of drought monitoring facilities within the region;
- relationship between climate and drought throughout the year in order to identify practical measures to combat drought rather than reacting to it;
- reclamation of degraded lands.

74. For these issues to be addressed fully, there is need for the creation of a new department within the "Ministry of environment". Unfortunately, time is not on our side. Indeed, desertification is a slow process, but it is extremely difficult to reverse the trend once the land has been desertified and hence the urgency of the matter.

SUMMARY

1. The mission to the Republic of Zimbabwe was made between 24-31 July 1988. This report pertains to the discussion between the Regional Adviser (RA) and the Officials of the Zimbabwe Government, and also contains some suggested recommendations to the Government of Zimbabwe.

2. The RA was warmly welcomed to Zimbabwe by Mr. C. Karikamombe, Undersecretary in The Ministry of Natural Resources and Tourism on behalf of the Permanent Secretary. Mr. Karikamombe pointed out that his Ministry had expected the RA in Zimbabwe between 11-16 July and that they did not know of his arrival in the country until the morning of 26/7/88 when the RA reported at the UNDP offices. The RA explained the communication breakdown that had occured between ECA and UNDP relating to the mission and apologized for any inconvenience that had been caused.

3. A short briefing meeting on conservation activities in Zimbabwe was then held between Mr. Karikamombe and the RA. Some of the issues discussed at the meeting included the following:

(i) National and sub-regional plans to combat drought and desertification;

(ii) Promotion of public awareness on environmental conservation;

(iii) Alternative energy sources;

(iv) Education, research and training;

(v) Transboundary issues and information exchange;

(vi) National expenditure on environmental protection and conservation.

4. On a visit to the Department of Natural Resources, the RA held discussions with Ms. S. Ncube, Mr. I. Kunene and Mr. D. Marongwe. Some of the relevant issues that emerged out of the discussion included the following:

(i) In order to create public awareness on environmental protection, posters on environmental conservation (in English and local languages) are regularly distributed to the provinces/districts and at the village and ward levels.

(ii) Everybody in the country is considered to be a resource user. Consequently members of the police force and the army are currently receiving training in environmental conservation matters.

(iii) Impact assessment studies have been hampered by a lack of qualified local personnel.

5. At the Headquarters of the Rural Afforestation Division which is under the Forest Commission, the RA held discussions with Mr. C. Phiri who informed him of the following:

(i) Eucalyptus was the main plant species being used in afforestation programmes and that there were 72 nurseries in the whole country.

(ii) Primary schools and some of the secondary schools were also being used in the production of seedlings.

(iii) No seeding of communal grazing rangelands was being contemplated by the Government before resettlement of the peasants.

6. At the Department of National Parks and Wildlife Management, the RA spoke to Mr. G.N. Pangeti. The following is a summary of what he asaid:

(i) The Governemnt plan is to utilize wildlife on a rational and sustainable basis.

(ii) Poaching is a serious threat and particularly on elephants and that the department was vigorously patrolling the parks.

(iii) Training of staff is being done locally and also at Mweka Training College in Tanzania.

(iv) The setting up of a gene bank is the responsibility of the University of Zimbabwe.

(v) Research and extension work are being hampered by shortage of staff trained in these areas.

(vi) Collection and export of plant and animal materials may be done from areas gazeted as national parks with permission of the Director of the Department. However, the collector shall be accompanied by a staff officer during the collection. The collector is further expected

to submit a report to the Director of Parks once he completes his research.

7. The Department of Biological Sciences under the chairmanship of Dr. J. Gopo conducts research in the fields of Ecology, Plant Physiology and Genetics which are relevant to drought and desertification control. More specifically, research is underway on the (i) relationship between distribution of tree species (both indigenous and exotics) and soils (ii) fuelwood surveys (iii) drought tolerance in native tree species (iv) relation-ship between isoenzymes (biochemical markers) and drought tolerance and growth rates of tree species. (v) development of a gene-bank for Zimbabwe and the SADCC countries. An M.Sc. degree programme in Tropical Resource Ecology has been in existence in the department for the past 15 years, although only a small number of graduates is produced. Currently no other M.Sc or Ph.D. programmes are in progress although the programmes have already been approved by the University machinery. The Department has no say in the development of the secondary school biology curriculum so that the Departments' in-put into the curriculum on topics such as environmental conservation is negligeable.

8. In the Department of Energy Resources and Development, the E.A. held discussion with Mr. C.E. Chimombe and Ms. E. Muguti. A summary of the main points discussed is as follows:

(i) Zimbabwe has no oil deposits but has exploitable coal deposits. The country is also endowed with hydroelectric potential which is being harnessed in the production of electricity. Although a number of hot springs exist in the country, no feasibility studies have yet been carried out on geothermal energy.

(ii) The use of biogas has been accepted by the Zimbabwe people. Currently the Ministry of Energy provides the technical know how to individuals wishing to construct a biogas plant so long as he procures the necessary materials, and furthermore, the Ministry considers the project viable. UNDP has agreed to assist Zimbabwe in the training of more technologists in the construction of biogas plants.

(iii) The acceptability of the use of solar-energy in place of fire-wood is now being studied.

(iv) The use of improved cooking stoves has been accepted by the masses.

(v) Extension work and research into alternative energy sources is being hampered by the lack of trained personnel.

9. The RA made an extendive field tour of the Mashona East Province and was guided by Mr. M.A. Tembo.

(i) The area receives 800-1000 in of mean annual rainfall. It is therefore, not a desertified area. In fact, most country receives more than 400 of mean annual rainfall per year.

(ii) There are large plantations of Eucalyptus for fuel-wood around the City of Harare.

(iii) The human population was sparse towards Marondera area but the area around Domboshawo communal grazing lands was densely populated.

(iv) Although reafforestation was not extensive in most of the areas visited by the RA, there were a number of primary schools with their own tree nurseries.

(v) Native cattle in hundreds were seen grazing in the communal grazing lands. Some areas appeared severely denuded due to overgrazing. However, there were other areas with luxuriant growth of miombo forest of mixed Acacia and Brachystegia.

(vi) The RA did not see any biogas plants nor solar harvesters in the communal grazing lands. There were many bore holes in the Domboshawo communal grazing lands.